

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A vehicular traveling control apparatus, comprising:
 - a vehicular forward substance detecting section that detects a forward substance located in a forward direction of the vehicle;
 - a vehicular travel controlling section that performs a vehicular travel control on the basis of a relative positional relationship between the forward substance detected by the vehicular forward substance detecting section and the vehicle;
 - an impulse detecting section that detects such an impulse that a detection range of the vehicular forward substance detecting section is varied has been applied to the vehicular forward substance detecting section;
 - ~~a variation-rate estimating section that~~ wherein the vehicular travel controlling section estimates a variation-rate an optical axis deviation quantity of the detection range of the vehicular forward substance detecting section when the impulse detecting section detects that the impulse has been applied to the forward substance detecting section; and
 - a ~~vehicular traveling running control modifying~~ varying section that ~~modifies~~ varies a control method of the vehicular travel controlling section in accordance with the ~~variation-rate~~ optical axis deviation quantity estimated by the ~~variation-rate estimating~~ vehicular travel controlling section.
2. (Currently Amended) A vehicular traveling control apparatus as claimed in claim 1, further comprising ~~a detection range variation informing section that informs a vehicular occupant that the detection range of the vehicular forward substance detecting section is varied when the impulse detecting section detects that the impulse has occurred~~ wherein the vehicular travel controlling section estimates the optical axis deviation quantity based on an amount of the impulse detected by the impulse detecting section and based on a map of impulse amount versus optical axis deviation quantity.

3. (Cancelled).

4. (Withdrawn) A vehicular traveling control apparatus as claimed in claim 1, further comprising an acceleration detecting section that detects a vehicular acceleration of the vehicle and wherein the impulse detecting section detects the impulse using the vehicular acceleration detected by the acceleration detecting section.

5. (Withdrawn) A vehicular traveling control apparatus as claimed in claim 1, further comprising a yaw rate detecting section that detects a yaw rate developed on the vehicle and wherein the impulse detecting section detects the impulse using the yaw rate detected by the yaw rate detecting section.

6. (Withdrawn) A vehicular traveling control apparatus as claimed in claim 1, further comprising a vehicle speed detecting section that detects a vehicular velocity of the vehicle and wherein the impulse detecting section detects the impulse using a variation rate of the vehicular velocity of the vehicle detected by the vehicle speed detecting section.

7. (Original) A vehicular traveling control apparatus as claimed in claim 1, wherein the impulse detecting section detects the impulse on the basis of the relative positional relationship between the forward substance detected by the vehicular forward substance detecting section and the vehicle.

8. (Previously Presented) A vehicular traveling control apparatus as claimed in claim 1, further comprising a collision avoidance determining section that determines whether it is possible to avoid a collision of the vehicle against the forward substance by a vehicular brake system and it is possible to avoid the collision of the vehicle against the forward substance by a driver's vehicular steering on the basis of the relative positional relationship to the forward substance detected by the vehicular forward substance detecting section, a braking characteristic of the vehicle, and a steering characteristic thereof and wherein the impulse detecting section detects the impulse when a result of a determination by the collision avoidance determining section indicates that it is not possible to avoid the collision of the

vehicle against the forward substance through the vehicular brake system nor the driver's vehicular steering.

9. (Currently Amended) A vehicular traveling control apparatus as claimed in claim 1, wherein the ~~vehicular traveling~~ running control ~~modifying~~ varying section performs a vehicular traveling control only for a smaller relative positional relationship to the forward substance as the ~~variation-rate~~ optical axis deviation quantity of the detection range estimated by the ~~variation-rate-estimating~~ vehicular travel controlling section becomes large and also performs the vehicular travel control for a large relative positional relationship to the forward substance as the ~~variation-rate~~ optical axis deviation quantity becomes small, as compared with the large ~~variation-rate~~ optical axis deviation quantity.

10. (Currently Amended - Withdrawn) A vehicular traveling control apparatus as claimed in claim 1, wherein the impulse detecting section comprises: an impulse occurrence determining section that determines whether such the impulse that the detection range of the vehicular forward substance detecting section is varied has occurred on the basis of whether a magnitude of an absolute value of an acceleration signal from a vehicular acceleration sensor is in excess of a predetermined display threshold value ($\Delta\theta_{SET}$); an optical axis deviation quantity estimating section that estimates the ~~the~~ [[an]] optical axis deviation quantity ($\Delta\theta$) of the vehicular forward substance detecting section with respect to the forward direction of the vehicle when the magnitude of a vehicular deceleration detected by the acceleration sensor is in excess of a ~~a~~ [[the]] predetermined display threshold value ($\Delta\theta_{SET}$); and an optical axis deviation display unit that displays a state of optical axis deviation when the optical axis deviation quantity ($\Delta\theta$) is equal to or smaller than the predetermined display threshold value ($\Delta\theta_{SET}$).

11. (Withdrawn) A vehicular traveling control apparatus as claimed in claim 10, wherein the impulse detecting section further comprises: a first optical axis deviation quantity determining section that determines whether the optical axis deviation quantity ($\Delta\theta$) is equal to or larger than a first predetermined value ($\Delta\theta_{TH2}$); a brake control operation distance setting

section that sets a brake control operation distance (d_{SET}) in accordance with the optical axis deviation quantity ($\Delta\theta$) when the optical axis deviation quantity determining section determines that the optical axis deviation quantity ($\Delta\theta$) is equal to or smaller than the first predetermined value ($\Delta\theta_{TH2}$); and a second optical axis deviation quantity determining section that determines whether the optical axis deviation quantity ($\Delta\theta$) is larger than a second predetermined value ($\Delta\theta_{TH1}$) when the optical axis deviation quantity ($\Delta\theta$) is equal to or smaller than the first predetermined value ($\Delta\theta_{TH2}$).

12. (Withdrawn) A vehicular traveling control apparatus as claimed in claim 11, wherein, when the first optical axis deviation quantity determining section determines that the optical axis deviation quantity ($\Delta\theta$) is larger than the first predetermined value ($\Delta\theta_{TH2}$), a brake control inhibit flag F_{CA} is set to a logical "1" representing brake control inhibit.

13. (Withdrawn – Previously Presented) A vehicular traveling control apparatus as claimed in claim 12, further comprising a traveling control inhibiting section that inhibits the vehicular travel control by the vehicular travel controlling section when the impulse detecting section detects that the impulse has been applied to the vehicular forward substance detecting section, wherein the traveling control inhibiting section comprises a vehicular traveling control inhibit confirming section that confirms whether the brake control inhibit flag (F_{CA}) is set to a logical "1" and the brake of a vehicular brake system is not operated and the traveling control inhibiting section inhibits the travel control when the vehicular traveling control inhibit confirming section confirms that the brake control inhibit flag (F_{CA}) is set to a logical "1" and the brake system of the vehicle is not operated.

14. (Withdrawn – Previously Presented) A vehicular traveling control apparatus as claimed in claim 13, further comprising a relative positional relationship determining section that determines whether the brake control inhibit flag (F_{CA}) is reset to a logical "0" and a relative distance (dr) between the vehicle and the forward substance detected by the vehicular forward substance detecting section is larger than a brake control operation distance (d_{SET}) when the vehicular traveling control inhibiting section confirms that the brake control inhibit flag (F_{CA}) is reset to the logical "0" and the brake system of the vehicle is operated.

15. (Withdrawn) A vehicular traveling control apparatus as claimed in claim 14, wherein an automatic braking is inhibited when the relative positional relationship determining section determines that the brake control inhibit flag (F_{CA}) is reset to a logical "0" and the relative distance (dr) between the vehicle and the forward substance is larger than the brake control operation distance (d_{SET}).

16. (Withdrawn) A vehicular traveling control apparatus as claimed in claim 15, further comprising a first collision avoidance enabling determining section that determines whether a collision avoidance against the forward substance by a braking through the brake system of the vehicle is possible on the basis of whether the relative distance (dr) and a relative velocity (Dr) between the vehicle and the forward substance give a predetermined relationship when the relative positional relationship determining section determines that the brake control inhibit flag (F_{CA}) is set to the logical "1" and the relative distance (dr) is equal to or smaller than the brake control operation distance (d_{SET}).

17. (Withdrawn) A vehicular traveling control apparatus as claimed in claim 16, further comprising a second collision avoidance enabling determining section that determines whether a collision avoidance against the forward substance by a vehicular driver's steering operation is possible on the basis of a vehicular lateral movement (Y) required for avoiding the collision against the forward substance and a time (T_y) required for the vehicle to avoid the collision by the vehicular driver's steering operation from the vehicular lateral movement when the relative positional relationship determining section determines that the brake control inhibit flag (F_{CA}) is reset to the logical "0" and the relative distance (dr) is equal to or smaller than the brake control operation distance (d_{SET}).

18. (Withdrawn) A vehicular traveling control apparatus as claimed in claim 17, wherein the lateral movement (Y) is determined on the basis of one of magnitudes of a rightward movement required to steer the vehicle in a rightward direction to avoid the collision against the forward substance and a leftward movement required to steer the vehicle in a leftward direction to avoid the collision against the forward substance which is smaller

than the other and a time it takes to steer the vehicle to avoid the collision against the forward substance by the lateral movement (Y).

19. (Currently Amended) A vehicular traveling control apparatus, comprising:
vehicular forward substance detecting means for detecting a forward substance located in a forward direction of the vehicle;

vehicular travel controlling means for performing a vehicular travel control on the basis of a relative positional relationship between the forward substance detected by the vehicular forward substance detecting means and the vehicle;

impulse detecting means for detecting such an impulse that a detection range of the vehicular forward substance detecting means is varied has been applied to the vehicular forward substance detecting means;

~~variation-rate-estimating means for~~ the vehicular travel controlling means estimating a ~~variation-rate~~ an optical axis deviation quantity of the detection range of the vehicular forward substance detecting means when the impulse detecting means detects that the impulse has been applied to the forward substance detecting means; and

~~vehicular-traveling running control~~ ~~modifying~~ varying means for ~~modifying~~ varying a control method of the vehicular travel controlling means in accordance with the ~~variation-rate~~ optical axis deviation quantity estimated by the ~~variation-rate-estimating means~~ vehicular travel controlling means.

20. (Currently Amended) A vehicular traveling control method performed by a computer, comprising:

providing a vehicular forward substance detecting section that detects a forward substance located in a forward direction of the vehicle;

performing a vehicular travel control on the basis of a relative positional relationship between the forward substance detected by the vehicular forward substance detecting section and the vehicle;

detecting such an impulse that a detection range of the vehicular forward substance detecting section is varied has been applied to the vehicular forward substance detecting section;

estimating ~~a variation rate~~ an optical axis deviation quantity of the detection range of the vehicular forward substance detecting section when detecting that the impulse has been applied to the forward substance detecting section; and

modifying varying a control method of the vehicular travel control in accordance with the estimated ~~variation rate~~ optical axis deviation quantity.

21. (Withdrawn) A vehicular traveling control apparatus, comprising:

a vehicular forward substance detecting section configured to detect a relative positional relationship between a forward substance located in a forward direction of the vehicle and the vehicle;

a collision avoidance determining section configured to determine whether it is possible to avoid a collision of the vehicle against the forward substance on the basis of the relative positional relationship;

an automatic braking control section configured to perform an automatic braking control when the collision avoidance determining section determines that the collision cannot be avoided; and

a braking control inhibiting section configured to inhibit the automatic braking control section based on a past determination that collision cannot be avoided as determined by the collision avoidance determining section and performance of the automatic braking control.

22. (Withdrawn) A vehicular traveling control apparatus, comprising:

vehicle forward substance detecting means for detecting a relative positional relationship between a forward substance located in a forward direction of the vehicle and the vehicle;

collision avoidance determining means for determining whether it is possible to avoid a collision of the vehicle against the forward substance on the basis of the relative positional relationship;

automatic braking control means for performing an automatic braking control when the collision avoidance determining means determines that the collision cannot be avoided; and

braking control inhibiting means for inhibiting the automatic braking control based on a past determination that the collision cannot be avoided as determined by the collision avoidance determining means and performance of the automatic braking control.

23. (Withdrawn) A vehicular traveling control method, comprising:
detecting a relative positional relationship between a forward substance located in a forward direction of the vehicle and the vehicle;
determining whether it is possible to avoid a collision of the vehicle against the forward substance on the basis of the relative positional relationship;
performing an automatic braking control when determining that the collision cannot be avoided; and
inhibiting the automatic braking control based on a past determination that collision cannot be avoided and performance of the automatic braking control.

24. (Previously Presented) A vehicular traveling control apparatus as claimed in claim 1, further comprising:
means for determining whether or not automatic braking is currently being performed, wherein the vehicular travel controlling section inhibits braking control when automatic braking is currently not being performed, and
wherein when automatic braking is currently being performed, the vehicular travel controlling section determines whether or not braking avoidance or steering avoidance by a vehicle operator is possible to avoid a collision, and if so, the automatic braking is released.

25. (New) A vehicular traveling control apparatus as claimed in claim 19, wherein the vehicular travel controlling means estimates the optical axis deviation quantity based on an amount of the impulse detected by the impulse detecting means and based on a map of impulse amount versus optical axis deviation quantity.

26. (New) A vehicular traveling control method as claimed in claim 20, wherein the optical axis deviation quantity is estimated based on an amount of the impulse detected and based on a map of impulse amount versus optical axis deviation quantity.